

DESCRIPTIONS OF AUSTRALIAN EOLIDACEA (MOLLUSCA: OPISTHOBRANCHIA)

4. THE GENERA *PLEUROLIDIA*, *FIONA*, *LEARCHIS* AND *CERBERILLA* FROM LORD HOWE ISLAND.

By ROBERT BURN*

Text fig. 1-16.

SUMMARY

For the first time, eolids are reported from Lord Howe Island in the Tasman Sea. One new genus, *Pleurolidia*, and two new species, *P. juliae* and *Learchis howensis*, are described. *Pleurolidia* is also recorded from Queensland. The records of *Cerberilla longicirra* Bergh and *Cerberilla affinis* Bergh are the first since the original descriptions. *Fiona pinnata* (Eschscholtz) is a common pelagic species.

INTRODUCTION

Lord Howe Island (159° 20' East, 31° 20' South) is situated in the northern Tasman Sea some 300 miles due east of Port Macquarie, New South Wales. The marine fauna is tropical and zoogeographically related to that of New Caledonia (Iredale and Allan, 1940).

The species described below all belong to the Australian Museum, Sydney (A.M. in text). They have been collected over a number of years by various persons and to my knowledge are the first records of this suborder from the island. Notes on the living animals and their habitats accompany only *Cerberilla affinis*.

The writer is indebted to Dr. D. F. McMichael, Australian Museum, Sydney, for the loan of this material, and to the National Museum of Victoria, Melbourne, for assistance with literature. In particular, the writer wishes to thank the Trustees of the Science and Industry Endowment Fund, C.S.I.R.O., for a grant to aid research on the Australian opisthobranchs. This is a further part of a comprehensive study of the Opisthobranchia of Australia being undertaken by the writer.

SYSTEMATIC SECTION

ORDER NUDIBRANCHIA

SUBORDER EOLIDACEA

SUPERFAMILY PLEUROPROCTA

FAMILY PLEUROLIDIIDAE nov.

Two specimens of an unusual eolid species from Lord Howe Island and Queensland have a combination of characteristics which denies them a place among the present systematic classification of the Eolidacea. It is obvious from the lateral position of the anus below the vestigial notal brim that they belong to the suborder Pleuroprocta (Odhner, 1939: 50, 54). The position of the renal pore between the anus and the genital aperture is in common with the family Coryphellidae where however the cerata are always set in rows or crowded together along either

* Hon. Associate in Conchology, National Museum of Victoria, Melbourne, Victoria.

side of the notum. A single row of cerata along the notal brim as in the two specimens recalls the family Notaeolidiidae, from which they are separated by their triseriate radula. Like Notaeolidiidae, they have smooth masticatory borders to the jaws.

It is in the triseriate radula that the most important characteristic of the specimens lies. The horn-shaped lateral teeth are smooth, a feature not unknown in the Coryphellidae and therefore not of major consequence. The rhachidian, however, differs from all known Pleuroproct species (where it is cuspidate and laterally denticulate) in that it is rectinate or comb-like. This alone suggests a relationship to the Cleiproct Aeolidiidae. But it is not so because of the lateral anus (exception *Protaeolidiella*), the single row of cerata along the notal brim (exception *Aeolidiopsis*), the separate spermathecal aperture into the genital atrium, the slender foot, and lastly the triseriate nature of the radula. In *Protaeolidiella* Baba (1955: 53) the anus opens below or lateral to the cerata but as there is no notal brim, this situation is considered cleiproctic. In *Aeolidiopsis* Pruvot-Fol (1956: 228) the cerata lie in a single row along either side of the notum and the anus opens in the right notal area. The tooth of *Aeolidiopsis* (loc. cit.: 229, fig. 8) is nearest in shape to that of the present two specimens.

It therefore becomes necessary to create a position for this eolid species. A new family PLEUROLIDIIDAE of the sub-order Pleuroprocta is proposed for this species alone and its new genus *Pleurolidia*. The characteristics of *Pleurolidia* (pleuro—from pleuroproct, i.e. side anus, and lidia—from *Aeolidiopsis*, to indicate radular convergence) are listed below; when more material is available, a reconsideration may be necessary.

PLEUROLIDIA gen. nov.

Pleuroproct Eolidacea with a triseriate radula (rhachidian pectinate, laterals smooth) and smooth masticatory borders; anus in anterior third of body length, renal pore a little in front; with rugose rhinophores and rounded foot corners; with notal brim bearing a single row of cerata, the latter with a low keel or rib on dorsal and ventral sides; penis knob-like, vas deferens prostatic, spermatheca and oviduct with separate apertures (connection probably external); nerve ring with short pedal and parapedal commissures.

Type species: *Pleurolidia juliae* sp. nov.

Pleurolidia probably occupies a specialized ecological position. Both collectors who have taken it are noted underwater divers, thus it may live in deeper water.

Pleurolidia juliae sp. nov.

Figures 1-6.

Material: 'The Brook', Lord Howe Island, July 1962, 1 specimen, Julie Booth, A.M. reg. no. C. 65661 (Holotype). Heron Island, Capricorn Group, Queensland, 1 specimen, Keith Gillett, A.M. reg. no. C. 65662.

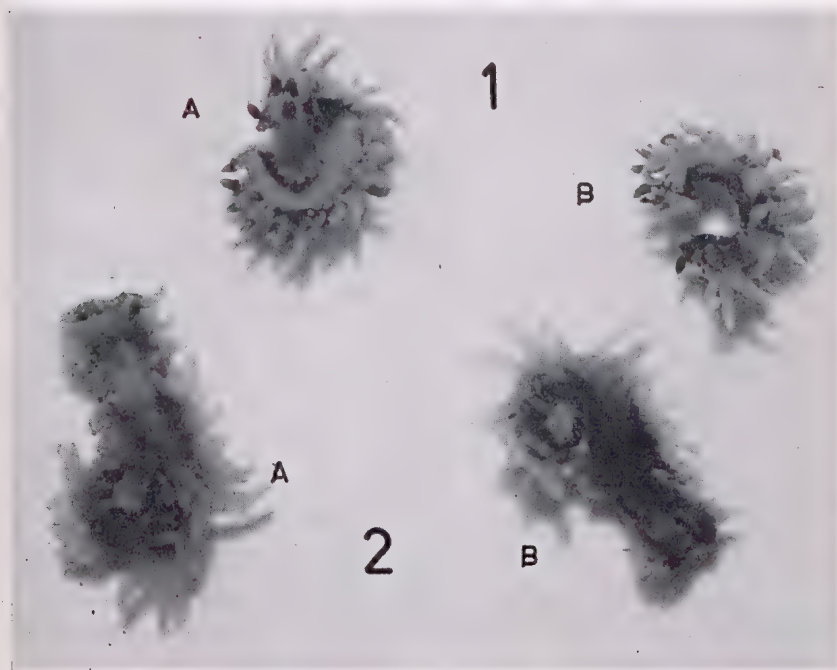
Habitat: Not known.

Description: The Holotype (Fig. 1A-1B) is a curled slug which straightened measures about 12 mm. in length (the tail tip is missing). Preserved colouration is dull pink, everywhere on the body with superficial black pigment, darker around the head, along the back and in the furrow or fold between the sides and the foot margins; tentacles and rhinophores black with cream tips; many of the cerata with a reddish brown band varying from three-quarters to one-third the ceras length, always with a cream tip. The second specimen (Fig. 2A-2B) is more red than pink in colour with a heavier superficial black pigment; it is 16 mm. in length.

The body (Fig. 3) is long, slender and high in section. The foot is as wide as the body, anteriorly rounded, the margins narrow but distinct. The head extends well forward of the foot; it is ventrally concave with a rim-like edge. The tentacles are short, their bases well behind the anterior edge of the head. The rhinophores are short, conical, wrinkled and granulated, their bases approximating. Cerata elongate, constricted in some above the second-third, non-caducous, each with a low slender keel on the dorsal and ventral sides; cnidosacs elongate, conical. Cerata in about ten groups on each side, set in a single row along a vestigial notal brim. In the Holotype, the groups are distinct anteriorly but in the spaces, liver ducts are visible reaching to the notal brim; the right liver consists of five cerata, the first branch of the posterior liver has four. In the second specimen, small secondary cerata line the notal brim between the anterior groups. Genital aperture (g) below the first group of cerata on the right side, anus (a) below second group, at two-thirds of distance between foot and cerata, renal pore (r) a little in front of and above the anus.

The small 1 mm. long yellow-brown jaws (Fig. 4) are very convex, triangulate, highest at anterior third; the masticatory borders are short and smooth. The slender radula (Fig. 5) has 32 rows of 1.1.1 teeth. Rhachidian pectinate, not greatly curved, with 10-11 colourless denticles on a yellow base. The majority of the denticles are long and slender, the outermost pair on each side have a web-like flange between them to about half length. The colourless lateral teeth are horn-shaped with a narrow basal flange; they are smooth.

The genital atrium (Fig. 6) of the Holotype was partially everted. Besides the penis (p) which projects slightly, there is a small anterior



pit which is the aperture of the muscular spermatheca (s). The oviduct (o) opens through a slender pore just behind the penis. The penis is knob-like with a seminal aperture on the dorsal edge; the vas deferens (v) is short, prostatic and a little winding. The entire spermatheca was not properly observed; it lies beside the penal sheath. There is no ampulla on the hermaphrodite duct. There is probably an external connection between the spermatheca and oviduct, as indicated in the figure.

The nerve ring is more concentrated than in *Notaolidia robsoni* Odhner (1934: 282, fig. 48) with larger pedal ganglia and shorter pedal and parapedal commissures.

Discussion: The description set out above refers wholly to the Holotype specimen except where otherwise stated. The pharyngeal bulb of the second specimen was unfortunately misplaced during a preliminary examination some years ago, thus no details of it are known. Certain minor differences between the Holotype and the second specimen exist which suggest that the two might not be conspecific, but lack of material precludes any argument in this direction.

The species is named after Miss Julie Booth of Fairfax Island, Queensland, formerly of Lord Howe Island, the collector of the Holotype.

SUPERFAMILY ACLEIOPROCTA

FAMILY FIONIDAE

Fiona pinnata (Eschscholtz)

Eolis pinnata Eschscholtz, 1831: 14, pl. 19, fig. 1.

Fiona pinnata. Bennett, 1966: 46, pl. 11, lower fig., pl. 12.

Material: Lord Howe Island, Tasman Sea: August 1962, 3 specimens, Julie Booth, A.M. reg. no. C. 63089; North Bay, May 1964, 5 specimens, Isobel Bennett, A.M. reg. no. C. 63090.

Habitat: On floating objects such as bottles, cuttle bones and logs upon which the stalked barnacle, *Lepas* spp., grow, and on the Siphonophore, *Velella*.

Remarks: This is a very common pelagic species, often washed ashore during heavy weather. The slightly-coiled egg mass is found attached to the object or *Velella* upon which the animals live.

F. pinnata is present in collections of opisthobranchs from most parts of Australia now before the writer. A report on these specimens will be published at a later time.

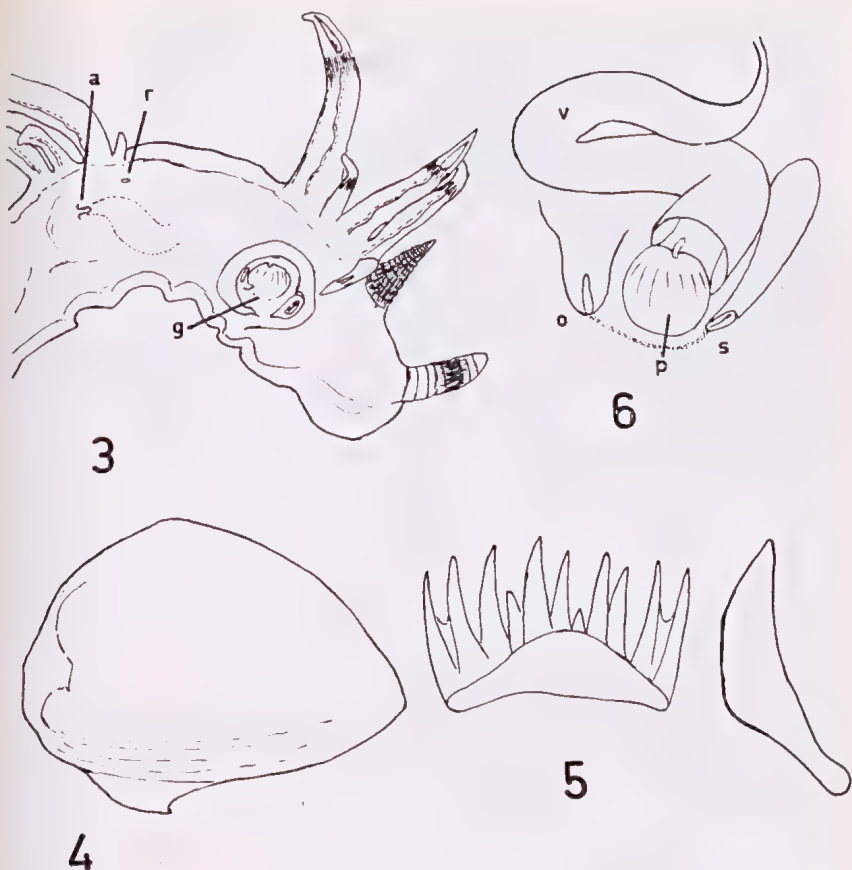
SUPERFAMILY CLEIOPROCTA

FAMILY FACELINIDAE

Genus *LEARCHIS* Bergh (1896: 385)

According to Marcus and Marcus (1960: 182), this genus is defined as follows: "Penis blunt or conical, unarmed and without appendages; jaw with denticulated masticatory border and without dorsal indentation; radular tooth with smooth median cusp flanked by at least 3 denticles; anterior angles of foot produced."

Type species: *Learchis indica* Bergh (1896: 386).



Remarks: The specimens described below fulfil all aspects of this generic diagnosis. They are in particular accord with *L. indica* in that the cerata of the posterior liver form groups of parallel rows. In *L. poica* Marcus and Marcus (1960: 183), the cerata of the posterior liver are in arches.

Aeolidia dangeri Risbec (1928: 252; 1953: 136) also belongs to *Learchis* (Marcus, 1958: 58; Marcus and Marcus, 1960: 183). Contrary to the latter authors' opinions (loc. cit.), *Rizzolia australis* Bergh (1884: 27) belongs not to *Learchis* but is a synonym of the Favorinidae *Austreaolis ornata* (Angas, 1864; Burn, 1966: 31).

Learchis howensis sp. nov.

Figures 7-10.

Material: South reef, Lagoon, Lord Howe Island, 2 January 1938, 2 specimens, Joyce Allan and R. Baxter, A.M. reg. nos. C. 65663 (Holotype) and C. 65664 (Paratype).

Habitat: Not known.

Description: The Holotype (Fig. 7) is the smaller of two well preserved slugs; it measures 7 mm. in length, the Paratype (Fig. 8) 9 mm. Body colour dull orange, the upper half of the digestive glands in the cerata black pigmented, the upper half of the cerata and the cnidosac white.

The body is slender and high, and is probably much longer in life. The narrow foot has strong tentaculiform anterior corners. Tentacles short, tapering. Rhinophores with six to eight annulae. Cerata long, carrot-shaped, cnidosacs small, fusiform. Liver system with five rows of 2, 3, 4, 4, 6 cerata in the right liver, behind which lie eight rows of 2 to 5 cerata (first posterior liver group right side) followed by five to seven single rows of 2 to 5 cerata. The genital aperture lies below the space of the fourth and fifth rows of the right liver. The anus emerges behind the second row of the posterior liver group on the right side.

The 0.9 mm. long brown jaws (Fig. 9) are broadly oval, narrower behind; masticatory borders with 20 strong, truncate denticles. Radular teeth (Fig. 10) 17, brown in colour, cusp prominent, lateral denticles six each side, base of teeth broad.

Penial spines or papillae were not observed in either specimen. The male copulatory organ comprises muscular penial sheath containing the short blunt evaginable penis.

Discussion: *L. howensis* is the first record of the genus from the Australian area. *L. indica* Bergh (1896: 386) differs from *L. howensis* by having more rows of cerata in the right liver and more groups behind, and fewer denticles on the posteriorly tapering jaws. *L. poica* Marcus and Marcus (1960: 183) has the posterior liver formed into arches and subquadrate jaws. *L. dangeri* (Risbec, 1928: 252) has red cerata with a blue band and yellow cap to each and smooth rhinophores.

Facelina newcombi (Angas, 1864; Burn, 1962: 114) from south-eastern Australia has black pigmented digestive glands and liver branchings identical to those of *L. howensis*. It is separated by a ring of spines on the penis and more elongate jaws. *F. bourailli* (Risbec, 1928: 254; 1953: 147) from New Caledonia has shorter cerata than the new species and a complex papillate penis.

FAMILY AEOLIDIIDAE

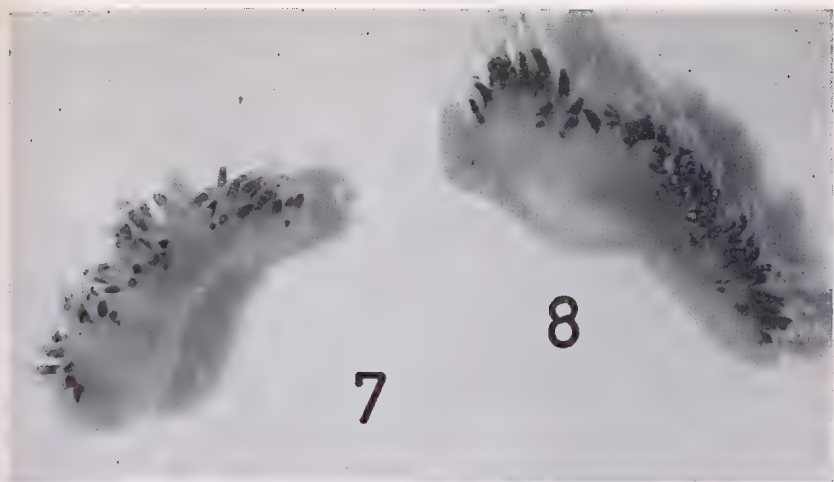
A uniseriate radula of pectinate teeth is the decisive characteristic of this family.

Genus *CERBERILLA* Bergh (1873: 160).

The high marginal denticle or denticles of the radular teeth distinguishes this genus from all others of the family. Other characteristics are less important. Radula short and not tapering. Foot wider than body with distinct tentaculiform anterior corners. Tentacles long, sometimes half body length. Rhinophores contiguous, small, cylindrical, smooth, near to anterior of head. Body broad; cerata in anterior liver branches short, leaving middle of dorsum bare, those behind longer, crowded together in middle line. Right liver an arch of two rows. Pleuroproctic anus below or behind third row of cerata of posterior liver right side. Penis large, unarmed.

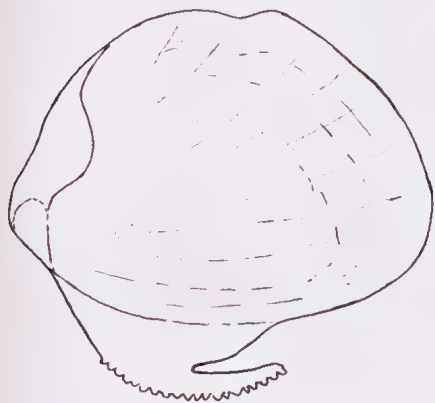
Type species: *Cerberilla longicirra* Bergh (1873: 161).

There are nine species attributed to *Cerberilla* (Tardy, 1965: 16, 19) plus the variety *affinis* Bergh (1889: 684) here described as a distinct species. In the past, the radular teeth have provided the basis for specific identification (Pruvot-Fol, 1934: 52). These do vary considerably, not so much in actual shape but in the numbers of major denticles in different teeth of the same radular. From study of the various figures and descriptions of the radulae, five species have an almost identical shape



of the teeth, i.e. *longicirrha*, *annulata*, *affinis*, *africana*, *moebii*, by which it is most difficult to separate them. Therefore other characteristics such as colour, shape of the right liver and number and shape of the cerata must be utilized. The remaining five species, i.e. *ambonensis*, *tanna*, *asamusiensis*, *pungoarena*, *bernadettæ*, have quite distinctive radular teeth to distinguish them.

Bergh (1889: 685) was the first to point out that the right liver in this genus formed an arch. No other reference to the right liver occurs in the literature until Tardy (1965) described the Atlantic French coast species, *C. bernadettæ* (Note: Ending here amended to feminine genitive "æ" for this species dedicated to Madame Bernadette Tardy, loc. cit.: 11). There the right liver is formed of two simple rows. The two specimens of *C. longicirrha* described below have an arch in the right liver with two rows of cerata in the anterior leg. *C. affinis* has an arch



9



10

also, in this instance with five rows of cerata in the anterior leg and a trace of two rows in the posterior leg. Thus, according to the shape of the right liver, some of the species can be distinguished as follows. Right liver an arch 1.
Right liver two simple rows

C. annulata (Quoy and Gaimard, 1832).
C. moebii (Bergh, 1888).
C. bernadettæ Tardy (1965).

1. Five rows of cerata in anterior leg

C. affinis Bergh (1889).

Two rows of cerata in anterior leg

C. longicirra Bergh (1873).

C. tanna Marcus and Marcus (1959) and *C. ambonensis* Bergh (1905) probably have two simple rows in the right liver. The other three species, *C. africana* Eliot (1903), *C. asamusiensis* Baba (1940) and *C. pungoarena* Collier and Farmer (1964) have neither indication of the right liver nor position of the anus in their descriptions.

Tardy (1965: 18) considers *Cerberilla* to be a somewhat primitive eolid genus. A pleuroproct anus is already known in the Aeolidiidae, viz. *Protæolidia* Baba (1955: 31, 53). But in neither genus is there a notal brim; therefore this situation is considered an adaptation of the cleioproct anus. The structure of the digestive gland (liver branching) with an arch or two simple rows in the right liver can hardly be primitive, though it may be said that the multiplicity of cerata in the anterior leg of the right liver of *C. affinis* suggests a more primitive ancestor than such species as have only a simple row in the anterior leg. The *Philine*-like shape of the egg-ring of *C. bernadettæ* is surely a special acquisition due to the peculiar habitat of the species and not a carry-over from an ancestral form.

Very few specimens of the various species are known. The discovery that two species, *C. pungoarena* Collier and Farmer (1964: 391) and *C. bernadettæ* Tardy (1965), burrow in sandy-mud and sand respectively probably accounts for this scarcity of specimens. *C. affinis* Bergh (1889) evidently burrows in sand also.

A possible member of *Cerberilla* is *Aeolis longibranchus* Volodchenko (1941: 59, 67, pl. 3, fig. 5, pl. 4, fig. 5). The meagre description and the figures indicate an animal somewhat like the species of this genus. The radular teeth have a straight anterior edge bearing 48-50 alternately large and small denticles and no high marginal denticles. This writer's later work (1955) dealing with the opisthobranchs has not been seen.

Cerberilla longicirra Bergh.

Figures 11-13.

Cerberilla longicirra Bergh, 1873: 161, pl. 12, fig. 6-16; 1874: 115; pl. 3, fig. 1-3; 1876: 653.

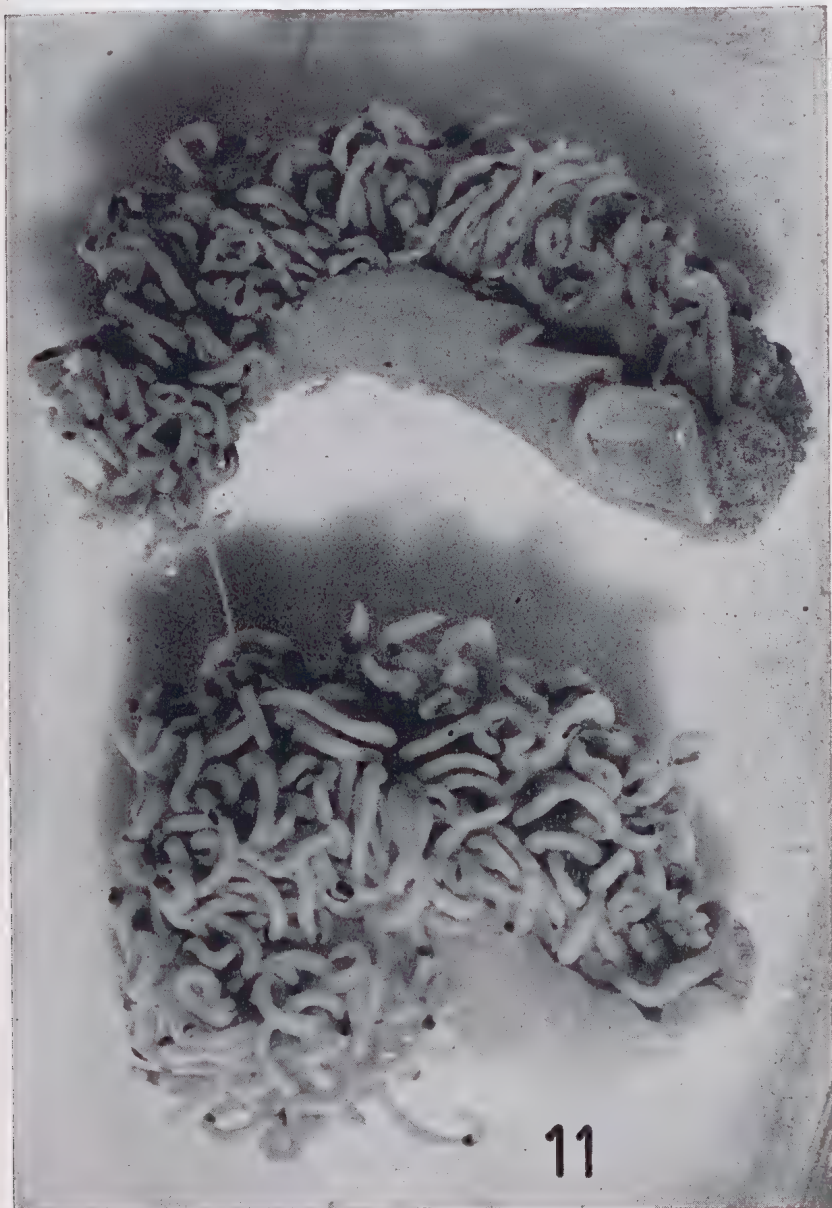
Material: Reef at Ned's Beach, Lord Howe Island, Tasman Sea, 16 December 1937, 2 specimens, R. Baxter, A.M. reg. no. C. 63091.

Habitat: Not known.

Description: The two specimens (Fig. 11) are 25 and 22 mm. in length. In colour they are dull yellowish pink with red-brown tips to the rhinophores, dorsally dark brown tentacles with a line of the same colour running back from each to the rhinophores, a narrow dark brown band at the base of the anteriormost cerata, and with a dark brown patch or transverse stripe just below the tip of some of the larger median area cerata.

The body is as high as wide and rather elongated, the foot much broader with distinct tentaculiform anterior corners. Tentacles about half as long as body, extremities very fine. Rhinophores small, cylindrical, smooth in one specimen and wrinkled in the other, bases contiguous,

near to front of head. Liver branches each side one small anterior arch (right liver and partner) and 17 oblique rows of up to 14 cerata. Largest cerata slender and long, 1 mm. diameter by up to 16 mm. length, oval in section, with small vertical basal flange on anterior side. Cerata in right liver in two rows on anterior leg, in single row on posterior leg; all other rows single. Genital aperture below posterior leg of right liver, anus low down between third and fourth rows of posterior liver right side, renal pore below preanal row.



Anterior arches of cerata in line with rhinophores. Median part of dorsum bare to fifth row of cerata of the posterior liver, thereafter median division hard to discern.

Jaws (Fig. 12) brown, 3.3. mm. long, elongate oval, rather broader than in the type specimen and with half as long again smooth masticatory borders. Radular teeth (Fig. 13) brownish, 0.5 mm. wide, 13 in number, each with 10-16 major denticles. Accessory denticles stand between and on the sides of the central 2-4 major denticles. The large marginal denticle at each side is lower than those in the middle.

Discussion: Like the original specimen, the present slugs have two rows of cerata in the anterior leg of the right liver and a single row in the posterior leg. Body shape, colouration and radular teeth are very similar also. Thus there is no hesitation in identifying these specimens with *C. longicirra*.

This is the first record of this species since Bergh described it from Samoa in 1873. It is a new record for both Lord Howe Island and the Australasian region.

Cerberilla affinis Bergh.

Figures 14-16.

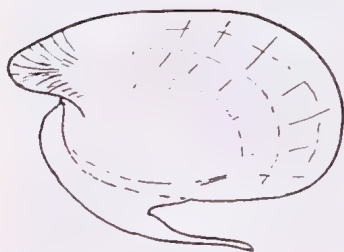
Cerberilla annulata (Quoy and Gaimard) var. *affinis* Bergh, 1889: 684, pl. 16, fig. 15-16, pl. 17, fig. 6-9, pl. 18, fig. 7; 1890: 880.

Material: Salmon Beach, Lord Howe Island, Tasman Sea, 20 June 1966, 1 specimen plus colour transparencies and black and white prints, Harold Cogger, A.M. reg. no. C. 65517.

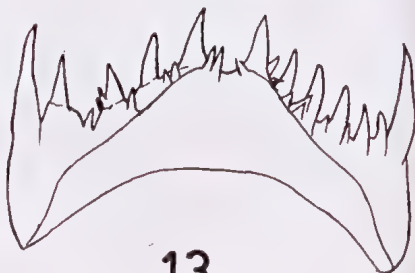
Habitat: Reef flat, 2 feet of water.

Description: The well-relaxed preserved slug measures 40 mm. overall length and 23 mm. over the cerata. The tapering sole is 38 mm. long and 16 mm. at its widest of which there is a 5 mm. wide thin foot margin set off on each side by a shallow groove. The rhinophores are 5 mm. high, the tentacles are 12 mm. long and the tentaculiform foot corners about 4 mm. The largest cerata measures 25 mm. in length and 1 mm. in major diameter. The everted penis is 12 mm. long.

The living animal (Fig. 14) is a spectacular sight with a complex patterning. The body is a bluish opaque white with the visible dorsum brownish. The foot is outlined with citron-yellow. A citron-yellow margin connects the tentacles which have a dark grey base, then successively bands of yellow, grey-brown, white, navy blue and blue-white. The rhinophores have a grey-brown basal half, then a yellow band, a narrow navy blue ring, a blue-white ring, a navy blue ring and a blue-white tip. Around the base of the rhinophores is a black circle from which run forward a pair of black lines to the veil between the tentacles and thus forming a roughly triangular area. This latter is



12



13



orange nearest the rhinophores, greyish in the anterior corners and marked by a large dark grey oval spot in the middle line.

At each side of the rhinophores there is a large dark grey quarter circle with cerata attached to the posterior and lateral edge. These cerata have a narrow black ring at the base, are then yellow followed by a wide band of grey and a yellow tip. In successive rows where the cerata are longer, the base is white or grey, rarely black, at the second-third is the black ring followed by yellow band, wide grey band and yellow tip. The long posterior cerata are bluish white except for the upper 5-6 mm. where there is the black ring, narrow yellow band, wider grey band and yellow tip. Some of the long cerata, particularly those in the second quarter of the row, have the grey band nearly black in shade; the cerata of the first or middle line quarter have a very pale wide grey band and those of the outer or lateral half of the row have just the yellow tip below which is sometimes a bluish spot, band or ring. The outermost small cerata which lie nearest the foot are dark brown, thus laterally there appears a brown stripe along the animal.

The body is as usual in the genus with a prominent buccal collar projecting beyond the head, a wide foot with tentaculiform corners and bilabiate anterior margin, and simple cylindrical rhinophores with contiguous bases. The tentacles are slender with small bases; in life they appear not to project forward of the head but to lie curved back or tucked into the furrow between foot and cerata. The dorsum is visible in the live slug to the level of the seventh row of the posterior liver. The cerata stand upon laterally prominent peduncles. The right liver comprises a peculiar arch the anterior leg of which is basically the quarter circle beside the rhinophore and the posterior leg appears as the row immediately behind. The anterior leg when folded up reveals a row of larger cerata along the upper edge and four rows of alternately placed, posteriorly diminishing yellow cerata rising from the underside of the quarter circle.

These are more dense towards the lateral end of the leg. The posterior leg of the right liver has a single row of cerata except at the very lateral end where a second row of three or four small cerata appears. Thereafter follows 23 rows of cerata. The cerata are flat in section and lie closely upon each other. The anterior cerata are smallest in number and size, those nearest the middle line are, anteriorly, very broad and, posteriorly, very slender and long; the tip containing the ovoid cnidosac spatulate. Bifid, trifid and quadrifid cerata occur without reason. The cerata in the rows of the posterior liver have an anterior basal flange.

The genital pore with the large everted penis lies below the posterior leg of the right liver. The penis is tapering and unarmed. The anus opens below the fourth row of the posterior liver on the right side.

The pale brown 5 mm. long jaws are rather more quadrate than oval, being high anteriorly and posteriorly. The masticatory borders are smooth. The radula has 14 glassy teeth, each 0.7 mm. wide. These have 12-16 major denticles with accessory denticles between and on the sides of the central four major denticles. The large marginal denticle each side is lower than those in the middle. One tooth has one major denticle missing from next to the middle line.

Discussion: An enquiry directed to the collector resulted in the following information relating to the habitat. "Low tide, on reef flat in 2 feet of water, 40 yards from shore, animal crawling over patch of dead algae-covered coral in an open bright sunny area. Placed in plastic bag with seawater, animal made directly for small quantity of sand in bottom. This was insufficient to burrow in but it completely covered itself with sand grains which adhered to its body. It stayed like this for several days until return to Sydney."

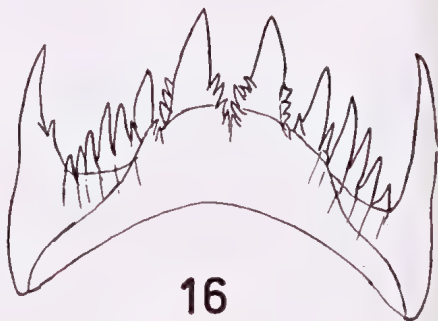
From this observation of the animal and the sand in the plastic bag, it is fairly obvious that *C. affinis*, like *C. pungoarena* and *C. bernadettae*, is a sand-burrowing species.

The animal is a truly magnificent spectacle in life. Dr. D. F. McMichael when forwarding the specimen to me wrote (28. vi. 1966), "I would say that this animal was one of the most spectacular marine organisms I have had the chance to see." The colour transparencies accompanying it bear out his comment. Mr. Harold Cogger, Australian Museum, Sydney, is to be congratulated for his foresight in bringing the live animal to Sydney so that it could be observed, photographed, properly relaxed and preserved.

At first the specimen was regarded as a new species. However its characteristics of five rows of cerata in the anterior leg of the right liver, the number of cerata and cerata rows, coloration, size and general shape of the radular teeth are too similar to *C. affinis* for effective separation. If such separation is considered in the future, then stress



15



16

should be laid upon the position of the genital aperture below the posterior leg of the right liver, the position of the anus below the fourth row of the posterior liver on the right side, the quadrate jaws and the number of accessory denticle-bearing major denticles of the radular teeth.

Bergh's specimen for Polo-Edam in eastern Indonesia (1889: 684) was originally described as a variety of *C. annulata* (Quoy and Gaimard, 1832). The form of the right liver in this species is two single rows (Bergh, 1876: 654), the genital aperture lies below the first row of the right side posterior liver, and the living animal is white with black on the head, violet tips to the rhinophores, and the cerata with yellow and black bands. It is therefore necessary to promote *affinis* to full specific status.

The black circle at each side of the rhinophores in *C. moebii* (Bergh, 1888: pl. 81, fig. 1) is somewhat similar to the markings of the present specimen. Much longer rhinophores, different coloration and a right liver formed of two rows separate the former from *C. affinis*.

This is the first record of the species since the original description in 1889. It is a new record for both Lord Howe Island and the Australasian region. It is peculiar that two species of this rare genus should occur at the one isolated locality.

REFERENCES

- BABA, K., 1955. *Opisthobranchia of Sagami Bay*. Suppl. 59 pp. 20 pls. Iwanami Shoten, Tokyo
- BENNETT, I., 1966. Some pelagic molluscs and associated animals in south-eastern Australian waters. *J. Malac. Soc. Aust.*, 9: 40-51, pl. 8-13.
- BERGH, R., 1873. Neue Nacktschnecken der Südsee, Malacologische Untersuchungen. *J. Mus. Godeffroy*, 1: 137-168, pl. 9-12.
- , 1874. *Ibid.* II. *Ibid.*, 3: 91-116, pl. 1-4.
- , 1876. Beiträge zur Kenntniss der Aeolidiaden, III. *Verhandl. Zool. Bot. Ges. Wien*, 1875, 25: 633-658, pl. 13-15.
- , 1884. Report on the Nudibranchiata. *Rep. Sci. Res. Challenger*, *Zool.*, 10: 1-154, pl. 1-14.
- , 1888. Nudibranchien vom Meere der Insel Mauritius. *Malacologische Untersuchungen*, (Semper, C., *Reisen im Archipel der Philippinen*.), 3(16,i): 755-814, pl. 77-81.
- , 1889. Beiträge zur Kenntniss der Aeolidiaden, IX. *Verhandl. Zool. Bot. Ges. Wien*, 1888, 38: 673-706, pl. 16-20.
- , 1890. Die Nudibranchien des Sunda-Meeres. *Malacologische Untersuchungen*. (Semper, C., *Reisen im Archipel der Philippinen*.), 3(17): 873-991, pl. 85-89.
- , 1896. Eolidiens d'Amboine. *Rev. Suisse Zool.*, 4(2): 385-394, pl. 16.
- BURN, R., 1962. Descriptions of Victorian Nudibranchiate Mollusca, etc. *Mem. Nat. Mus., Melb.*, 25: 95-128.
- , 1966. Descriptions of Australian Eolidacea, 3. The genera *Tularia*, *Embletonia* and *Austraeolis*, etc. *J. Malac. Soc. Aust.*, 9: 25-35.
- COLLIER, C. and FARMER, W., 1964. Additions to the nudibranch fauna of the East Pacific and the Gulf of California. *Trans. S. Diego Soc. Nat. Hist.*, 13(19): 377-396.
- ESCHSCHOLTZ, F., 1831. *Zool. Atlas*.
- IREDALE, T. and ALLAN, J., 1940. A review of the relationships of the Mollusca of Lord Howe Island. *Aust. Zool.*, 9: 444-451
- MARCUS, E., 1958. On western Atlantic Opisthobranchiate Gastropods. *Amer. Mus. Novit.*, no. 1906, 82 pp.

- MARCUS, E. and E., 1959. Some Opisthobranchs from the north-western Gulf of Mexico. *Publ. Inst. Mar. Sci. Univ. Tex.*, 7: 251-261, 3 pl.
- , 1960. Opisthobranchs from American Atlantic warm waters. *Bull. Mar. Sci. Gulf and Caribb.*, 10(2): 129-203.
- ODHNER, N., 1934. The Nudibranchiata. *Brit. Antarct. ("Terra Nova") Exped.*, 1910 Zool., 7(5): 229-310, 3 pl.
- , 1939. Opisthobranchiate Mollusca from the western and northern coasts of Norway. *K. Norske Vidensk. Selsk. Skr.*, 1939(1): 1-93.
- PRUVOT-FOL., A., 1934. Les opisthobranches de Ouoy et Gaimard. *Arch. Mus. Hist. Nat.*, (6), 11: 13-92: pl. 1.
- , 1956. Un aeolidien des mers tropicales, *Aeolidionis ransonii* n.g., n. sp. *Bull. Mus. Hist. Nat., Paris*, (2), 28(2): 228-231.
- RISBEC, J., 1928. Contribution à l'étude des Nudibranches Néo-Calédoniens. *Faune Colon. Franc.*, 2: 1-328, pl. A-D, 1-12.
- , 1953. Mollusques nudibranches de la Nouvelle-Calédonie. *Faune Un. Franc.*, 15: 1-189.
- TARDY, J., 1965. Description et biologie de *Cerberilla bernadetti*, espèce nouvelle . . . de la côte atlantique française. *Bull. Inst. Océanogr. Monaco*, 65, no. 1349, 22 pp., 6 pl.
- VOLODCHENKO, N., 1941. New nudibranchiate Molluscs from the Seas of the far-east of the U.S.S.R. *Invest. Far East. Seas U.S.S.R.*, 1: 53-68, pl. 1-4.

EXPLANATION OF FIGURES

- Fig. 1-6. *Pleurolidia juliae* sp. nov.
- Fig. 1. Holotype, from left (A), from right (B).
- Fig. 2. Second specimen, from above (A), from below (B).
- Fig. 3. Right side of Holotype, anterior end.
- Fig. 4. Left jaw from outside.
- Fig. 5. Radula.
- Fig. 6. Anterior parts of genital organs.
- Fig. 7-10. *Learchis howensis* sp. nov.
- Fig. 7. Holotype, from left.
- Fig. 8. Paratype, from left.
- Fig. 9. Left jaw from outside.
- Fig. 10. Radula.
- Fig. 11-13. *Cerberilla longicirra* Bergh.
- Fig. 11. Two specimens from right.
- Fig. 12. Left jaw from outside.
- Fig. 13. Radula.
- Fig. 14-16. *Cerberilla affinis* Bergh.
- Fig. 14. Living slug from above; photo A. Healy.
- Fig. 15. Left jaw from outside.
- Fig. 16. Radula.

Abbreviations: a—anus; a—genital aperture; o—oviduct; r—renal pore; s—spermatheca; v—vas deferens.